AFOSR and NASA Launch First-Ever Test Rocket Fueled by Environmentally-Friendly, Safe Aluminum-Ice Propellant

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8/20/2009 - **ARLINGTON, Va.** -- The Air Force Office of Scientific Research (AFOSR) and NASA recently announced the launch of an environmentally-friendly, safe propellant comprised of aluminum powder and water ice (ALICE).

"By funding this collaborative research with NASA, Purdue and The Pennsylvania State University, AFOSR continues to promote basic research breakthroughs for the future of the Air Force", said Dr. Brendan Godfrey, director, AFOSR.

Earlier this month, the collaborative team, Drs. Steven F. Son and Tim Pourpoint of Purdue, Rich Yetter and Grant Risha of Penn State, Vigor Yang of Georgia Tech, Harold Bell and Frank Bauer of NASA, and Mitat Birkan and Thomas Russell of AFOSR watched as the rocket soared high into the sky, to 1300 feet near Purdue University.

Photos 1 of 2

This is a photograph of the ALICE flight-vehicle assembled on the launch rail. It consists of an all-carbon-fiber, minimum diameter high power rocketry kit. (Credit: Dr. Steven F. Son, Purdue University)

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Son said the success of the flight can be attributed to "A sustained collaborative research effort on the fundamentals of the combustion of nanoscale aluminum and water over the last few years."

"This collaboration has been an opportunity for graduate students to work on an environmentally-friendly propellant that can be used for flight on Earth and used in long distance space missions," said NASA Chief Engineer Mike Ryschkewitsch at NASA Headquarters in Washington. "These sorts of university-led experimental projects encourage a new generation of aerospace engineers to think outside of the box and look at new ways for NASA to meet our exploration goals."

ALICE is generating excitement among the researchers because it has the potential to replace some liquid or solid propellants. It is a promising propellant energetically. Theoretically, when it is optimized, it could have a higher performance than a conventional propellant.

Son noted, "The ALICE propellant can be improved with the addition of oxidizers and become a potential solid rocket propellant on Earth. Away from this planet, on the Moon or Mars, ALICE can be manufactured in those locations instead of being transported at a large cost."